

REMARKS

The claims in the application are 28-60 and Claims 61 and 62 added by the present amendment.

Favorable reconsideration of the application as amended is respectfully requested.

A clean set of drawings (Figs. 1-8) is enclosed in accordance with accompanying Form PTO-948 while the claims have been amended to eliminate the rejections under 35 U.S.C. §112, second paragraph, raised in paragraphs 2-4 of the Office Action. In this regard, the amendment to independent Claims 28 and 43 finds clear support throughout the present application and drawings while Claims 61 and 62 introduced herein find support, e.g., on pages 8, 11-12 and in Fig. 2 of the present application. Additionally, a Supplemental Information Disclosure Statement is being simultaneously filed herewith.

Accordingly, the only outstanding issue is the prior art rejection of the claims. More particularly, Claims 28, 32-35, 38, 39, 43, 44 and 53-60 have been rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,233,448 to Alperovich et al in paragraphs 6 and 7 of the Office Action, while Claims 29-31, 36, 37, 40-42 and 45-52 have been rejected under 35 U.S.C. §103 as obvious over Alperovich et al additionally in view of U.S. Pat. No. 5,568,153 to Béliveau in paragraphs 9 and 10 of the Office Action. However, it is respectfully submitted the present invention as recited in all pending claims herein is patentable over the applied art, for the following reasons (reference will be made to preferred embodiments of the present invention illustrated in the drawings of the present application).

The present invention provides a method and system for finding the exact location of a mobile telephone (and user thereof) within a subscriber area, with a mobile telecommunications system operating, e.g., in a GSM mode (Global System for Mobile Communications). A subscriber to whom a subscriber number has been allocated can now be permanently reached within the total area served by the corresponding switching unit, i.e., so-called provider. These and other advantages are attained by the present invention which is directed to (among other features) providing or operating a communication system for mobile radio telephones having at least one subscriber area within a predetermined overall area and having at least one subscriber number, at least one radio cell transmitting a coordinate-containing signal to a mobile user unit within this overall area, and calculating whether the coordinates transmitted by the radio cell lie within the subscriber area.

In other words, at least one radio cell is arranged in the overall area and transmits a signal containing coordinates. The means for calculating whether or not the subscriber is within at least one subscriber area, calculates whether those transmitted coordinates by the radio cell lie within a subscriber area or not. The present invention ensures tariff location is precisely controlled by allocating the subscriber area(s). Furthermore, considerable freedom is provided the subscriber regarding when the subscriber would like to communicate and with which configuration.

In a preferred embodiment, the mobile user unit has a subscriber code module in which coordinates and a radius of the subscriber area are stored, with absolute difference between the coordinates transmitted by the radio cell and subscriber area being calculated. More particularly, it is determined if the absolute difference exceeds a predetermined value; if not, then it is determined whether square of this absolute

difference exceeds square of the radius. If the square of the difference is less than or equal to square of the radius, then the mobile user unit is within the subscriber area.

Thus, it is advantageous to store the square of the location radius for the subscriber area within the subscriber code or identity module (SIM) in addition to the radio cell coordinates, so that additional computations, e.g., calculating square of the location radius, can be avoided.

The present invention is not based upon just any kind of determining whether a mobile cell phone is within a certain area, but is rather based on the concept of a separate radio cell transmitting a signal to the mobile phone and containing coordinates to determine if the mobile phone is within the subscriber area. Alperovich et al simply disclose some methods for determining position of a mobile phone (column 3, lines 29-52) which are, e.g., use of a global positioning system contained within the mobile station and allow determining the actual location of the mobile station. Other methods include measuring the timing advance or propagation delay of signals traveling between the mobile station and a plurality of base station transceivers, already known from Béliveau.

However, there is no hint in either Alperovich et al or Béliveau of adapting a communications system so that the radio cell transmits coordinates to a mobile station, on the basis of which it is determined whether or not the mobile station lies within a subscriber area. Alperovich et al disclose storing coordinates x,y in data area 60 to allocate a certain service or other action with these coordinates. However, the use of this data area requires the coordinates x,y be known. In contrast, in the present invention, knowledge of the coordinates of the mobile station is based upon the coordinates of the radio cell which transmits its coordinates to the mobile station which

is located in the area of this cell, providing, e.g., the advantage of being independent from any kind of cell reconfiguration such as a change of the cell IDs or location area codes.

The present invention allows reliable determining of actual position of the mobile station independent of any type of cell reconfiguration or amendment, such as additions or deletions. There is no suggestion in any prior art document of applying such a system or method, while there is certainly no motivation for one skilled in the art to adapt a prior communication system so that cells transmit their coordinates to a mobile station.

The features of the presently claimed invention together with the accompanying advantages attained thereby are neither disclosed nor suggested by the applied art, for the following reasons.

More particularly, Alperovich et al are directed to a system for performing selected actions based upon position of a mobile station, i.e., phone 14, e.g., within a home or business 10. The selected actions include forwarding all calls to a landline or wireline phone 12 located within the home or business 10, when the mobile phone 14 is also located within the home or business (Fig. 1 and column 3, lines 25-27). To determine mobile phone location, the mobile phone 14 preferably includes circuitry such as a global positioning system (GPS); alternatively, the timing advance or propagation delay of signals between the mobile phone 14 and a plurality of base station transceivers 32 can be used to calculate position of the mobile phone 14. These two measuring techniques are also disclosed in Béliveau at column 5, line 36-column 6, line 27.

It is also stated at column 3, lines 41-45 and 48-52 in Alperovich et al, when very small distance is involved (e.g., within a home), position of the mobile phone can be

monitored by determining the identity number of the cell in which the mobile phone 14 is located. It is explicitly stated at column 3, lines 46-48 of Alperovich et al the particular method used for positioning is not a critical aspect of their invention. Accordingly, Alperovich et al disclose nothing more than what has been described in Béliveau and fail to disclose arranging a radio cell F1, F2, F3, F4 within a subscriber area HZ and then calculating whether coordinates transmitted by the radio cell F1, F2, F3, F4 lie within the subscriber area HZ.

The data array 60 shown in Fig. 2 of Alperovich et al store a plurality of activation locations 62 to determine, e.g., activation or deactivation of a telecommunications feature (column 3, line 65-column 4, line 32). This data array 60 can be stored in either the mobile phone 14, home location register 40 or other locations within the public land mobile network 30. In one embodiment shown in Fig. 3, a call forwarding feature to the landline or wireline phone 12 is deactivated and mobile phone 14 activated, when the mobile phone 14 leaves the prescribed home location 10 (column 5, lines 29-45). In another embodiment as shown in Fig. 4, comparisons between current location of a mobile phone 14 and pre-selected location 62 are only performed when the mobile phone 14 is within that location 62 (column 2, lines 36-40 and column 6, lines 12-65).

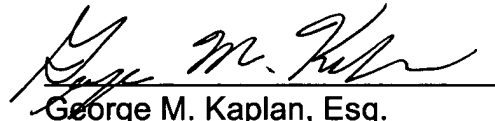
Accordingly, Alperovich et al fail to disclose the advantageous features of the present invention which improve versatility of mobile phone use and reduce operating costs. Béliveau adds nothing to Alperovich et al which would render obvious the invention recited in any pending claim herein. The remaining art of record has not been applied against the claims and will not be commented upon further at this time.

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Therefore, in view of the forgoing amendment and accompanying remarks, it is respectfully submitted the present application is now in condition for allowance. Please contact the undersigned attorney should there be any questions. A petition for an automatic three month extension of time for response under 37 C.F.R. §1.136(a) is enclosed in triplicate together with the requisite petition fee and fee for additional claims introduced herein.

Early favorable action is earnestly solicited.

Respectfully submitted,



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